

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

Ex parte KAORU MOTONAMI  
and MASAO NAGATOMO

---

Appeal No. 95-2320  
Application 08/074,517<sup>1</sup>

---

ON BRIEF

---

Before KRASS, JERRY SMITH, and CARMICHAEL, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

---

<sup>1</sup>Application for patent filed June 11, 1993. According to appellants, this application is a division of Application 07/994,436, filed December 21, 1992, now U.S. Patent No. 5,241,212, issued August 31, 1993; which is a continuation of Application 07/689,325, filed April 23, 1991.

This is a decision on appeal from the final rejection of claims 7 through 11, the only claims pending in the application.<sup>2</sup>

The invention is directed to a method of manufacturing a semiconductor device which has specific circuits and redundant circuits as well as connections which can be fused and removed for replacing a defective circuit with a redundant circuit.

Independent claim 7, illustrative of the invention, is reproduced as follows:

7. A manufacturing method of a semiconductor device which includes at least a specific circuit portion and a spare redundant circuit portion having the same function as said specific circuit portion as well as a connection which can be fused and removed for replacing a defective specific circuit portion with said redundant circuit portion, said method comprising the steps of:

forming interconnection layers and a testing electrode on an insulator layer formed on a main surface of a semiconductor substrate, said interconnection layers being spaced from each other and located at opposite sides of a region of a connection conductive layer embedded in and completely covered by said insulator layer, and a testing electrode being spaced from said interconnection layers;

forming a concave portion which is located in said insulator layer between said interconnection layers and has a final bottom wall, formed of said insulator layer, located immediately above said connection conductive layer; and

---

<sup>2</sup>We note that appellants make reference, throughout the brief to "claim 1." Since there is no claim 1, appellants are apparently referring to "claim 7" and we construe this to be the case.

Appeal No. 95-2320  
Application No. 08/074,517

forming a protection film on said insulator layer so as to cover surfaces of at least said interconnection layers, and expose a surface of said testing electrode.

The examiner relies on the following references:

Yabu et al. (Yabu)	4,455,194	Jun. 19, 1984
Takayama et al. (Takayama)	4,536,949	Aug. 27, 1985
Fischer	4,853,758	Aug. 1, 1989
Billig et al. (Billig)	5,025,300	Jun. 18, 1991 (filed Jul. 25, 1990)

Claims 7 through 11 stand rejected under 35 U.S.C. § 103 as unpatentable over Fischer in view of Billig, Takayama or Yabu.

Rather than reiterate the arguments of appellants and the examiner, reference is made to the brief and answer for the respective details thereof.

#### OPINION

Initially, we note, in passing, that while the examiner's statement of rejection appears to be a rejection over Fischer, as the primary reference, in view of any one of Billig, Takayama or Yabu, because claim 7 includes the limitation of a "testing electrode" and the examiner appears to rely only on either one of Takayama or Yabu, but not Billig, for this feature,

perhaps the examiner meant to reject the claims over Fischer in view of Billig and further in view of either one of Takayama or Yabu.

In any event, we will not sustain the rejection of claims 7 through 11 under 35 U.S.C. § 103 because independent claim 7 requires a concave portion to be formed in the insulator layer, the concave portion having a final bottom wall which is "located *immediately* above said connection conductive layer" [emphasis ours]. The meaning of this is clear from a reference to the instant disclosure wherein Figs. 2A-C show the final bottom of the concave portion immediately, or directly, above connection conductive layer element 3.

It is the examiner's apparent position that this limitation is taught by either Fischer or Billig. With regard to Fischer, the examiner contends that the concave portion 16 of dielectric layer 13 in Fig. 1 has a bottom wall and that bottom wall is *immediately* above the connection conductive layer 12. While we understand the examiner's position in contending that portion 16 of Fischer is, indeed, above element 12, and such an interpretation would appear to meet the claim language if the language only called for the bottom wall to be above the connection conductive layer, the instant claim language calls for

the bottom wall to be *immediately* above the connection conductive layer. When this term is construed in light of the disclosure, it means that the bottom wall is directly above the connection conductive layer so as to cover the connection conductive layer and not above the connection conductive layer, but off to one side. The examiner's interpretation effectively reads the term *immediately* out of the claim since the examiner interprets the language to mean that the bottom wall may be located anywhere in relation to the connection conductive layer so long as it is somewhere in a plane at a higher level than the connection conductive layer. If the examiner's interpretation is accepted, there would have been no need for appellants to include the term *immediately*.

With regard to Billig, the examiner appears to contend [answer - page 8] that there is a concave portion which has a bottom wall formed immediately above the connection conductive layer 14 within insulating layer 15. However, it is not clear what the bottom wall would be in Billig. If it is the top surface of layer 13, then, clearly, this bottom wall would be beneath, and not above, connection conductive element 14, as required by the instant claims. If the examiner is somehow referring to film 30 over the top of element 14, it is not

Appeal No. 95-2320  
Application No. 08/074,517

understood how this film can be considered, in any way, shape or form, to be a "bottom wall" of a concave portion.

Since the examiner has not adequately addressed the portion of claim 7 requiring a final bottom wall to be located immediately above the connection conductive layer and shown, convincingly, how this claim limitation is taught or suggested by the applied references, we will not sustain the rejection of claims 7 through 11 under 35 U.S.C. § 103.

As a matter of completeness, however, we note that we do not find persuasive appellants' argument [brief - page 9] that Fischer does not disclose the claimed "connection conductive layer embedded in and completely covered by said insulator layer." Element 12 of Fischer is clearly "embedded" in insulator, or dielectric, layer 13. We find no requirement in the claim that the bottom surface of element 12 be covered by layer 13 and do not construe the terms "embedded" or "completely covered" so narrowly. But, even if so required, we find no reason why the two insulating layers 11 and 13, of Fischer, together, cannot be said to constitute "an insulator layer," as claimed.

Appeal No. 95-2320  
Application No. 08/074,517

In any event, the examiner's decision rejecting claims 7  
through 11 under 35 U.S.C. § 103 is reversed.

REVERSED

Errol A. Krass	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
Jerry Smith	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
	)	
James T. Carmichael	)	
Administrative Patent Judge	)	

Appeal No. 95-2320  
Application No. 08/074,517

Lowe, Price, Leblanc & Becker  
99 Canal Center Plaza, Ste. 300  
Alexandria, VA 22314